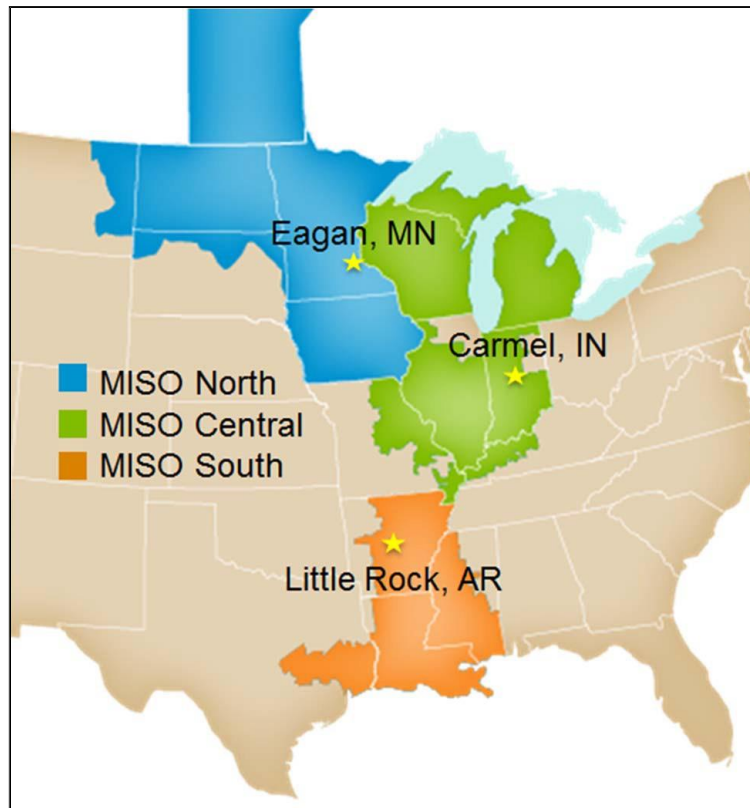




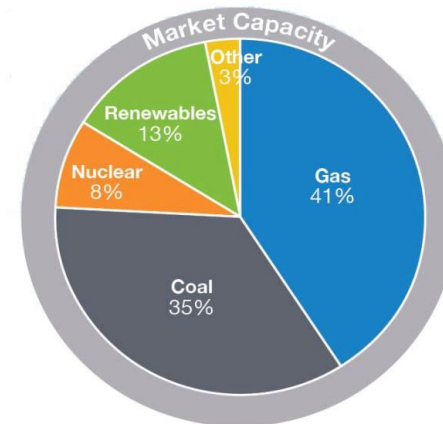
2020 Summer Readiness Workshop

May 27th , 2020

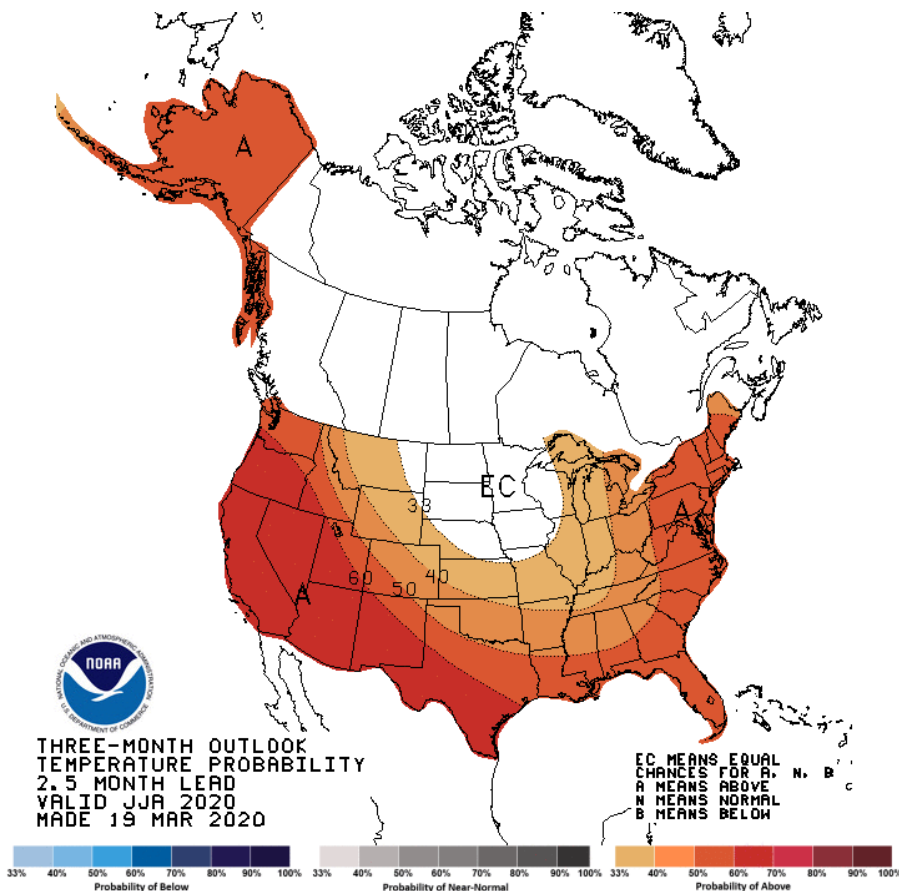
MISO is an independent, non-profit organization responsible for maintaining reliable and cost-effective delivery of power in 15 states and one Canadian province



MISO by-the-numbers	
High Voltage Transmission	65,800 miles
Generation Capacity	174,000 MW
Peak System Demand	127,125 MW
Customers Served	42 million



Adequate resources are projected to meet demand for Summer 2020



MISO Preliminary 2020 Summer Forecast

Summer Peak Forecast	125 GW
----------------------	--------

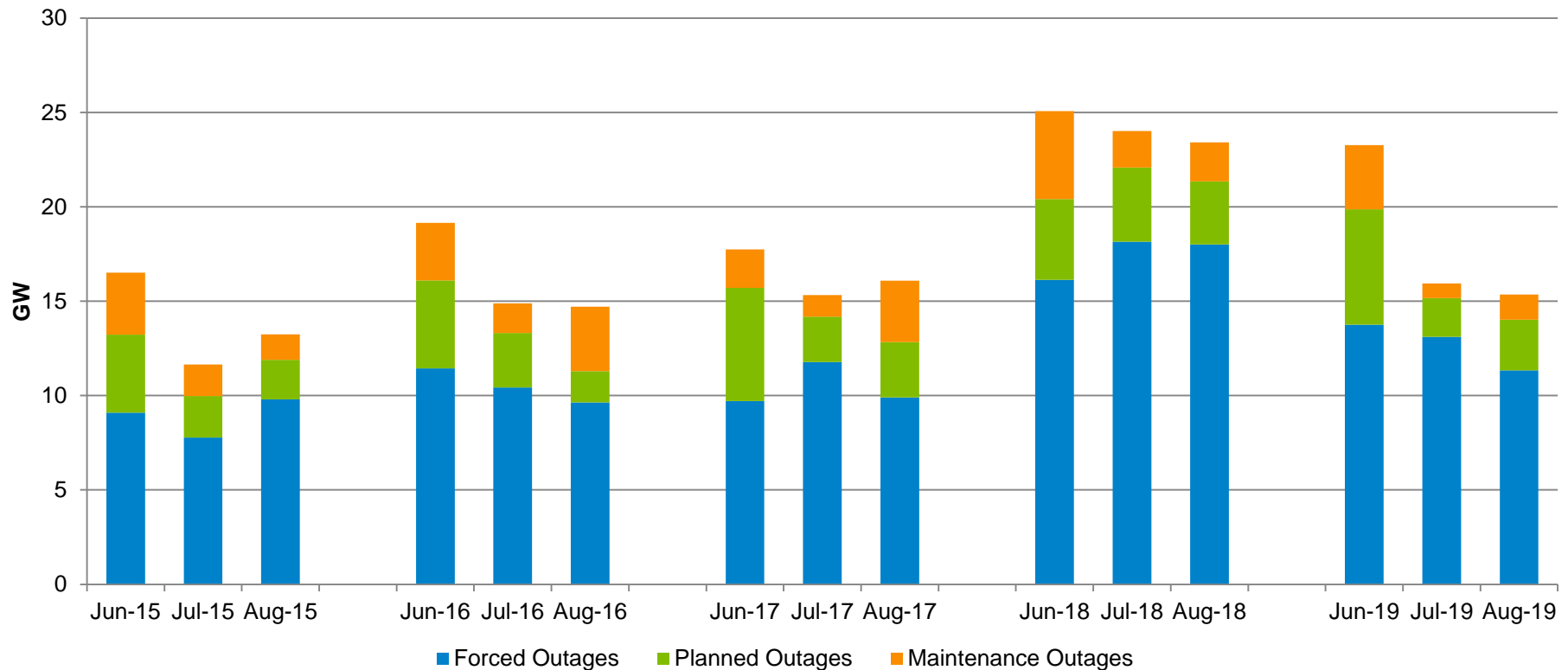
Total Projected Available Capacity	152 GW
------------------------------------	--------

***All-time Summer Peak:
127 GW on July 20th, 2011***

NOAA forecasts warmer than normal temperatures for a majority of the MISO footprint

Though not as high as 2018, forced outages slightly higher than the 5-year average

MISO Generation Outage Totals During Monthly Peak



	Forced Outages (GW)	Total Outages (GW)
Average of 15 monthly peak hours	12.0	17.8
Maximum seasonal peak hour	18.2	25.1

Range of generation availability and load forecasts uncertainty captures risk utilized in the 2020 summer scenarios

Generation

- **Probable Generation Capacity**
 - Removes an average volume of resource outages¹ (planned, maintenance, and forced)
- **Low Generation Capacity (High Outage)**
 - Removes a higher than normal volume of resource outages (planned, maintenance, and forced), typically because of non-normal weather conditions

Load

- **Probable Load Forecast**
 - 50/50 forecast², provided by Market Participants
- **High Load Forecast**
 - 90/10 forecast³



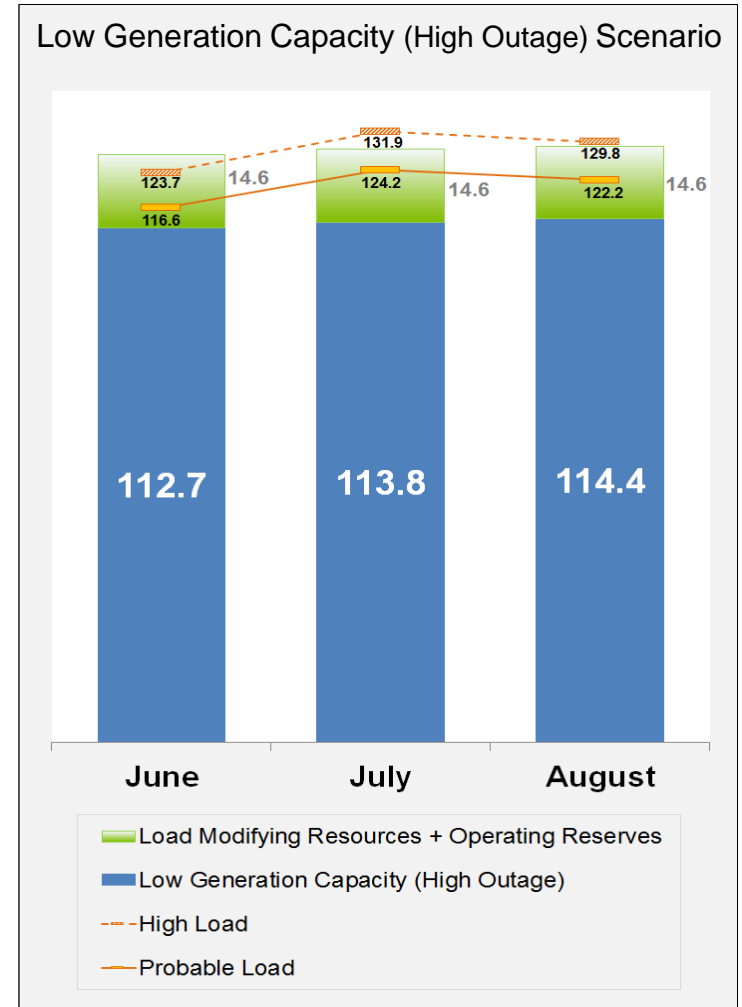
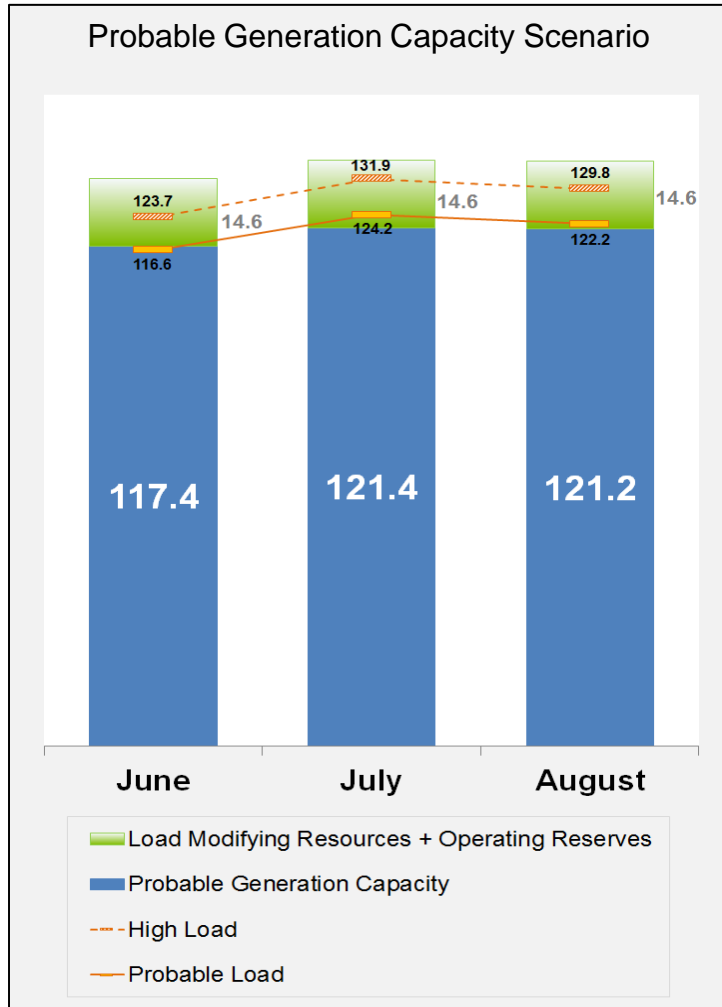
¹ Based on 5-year historical outage information provided by Resource Owners

² 50% chance of the actual load being lower and 50% chance of the actual load being higher

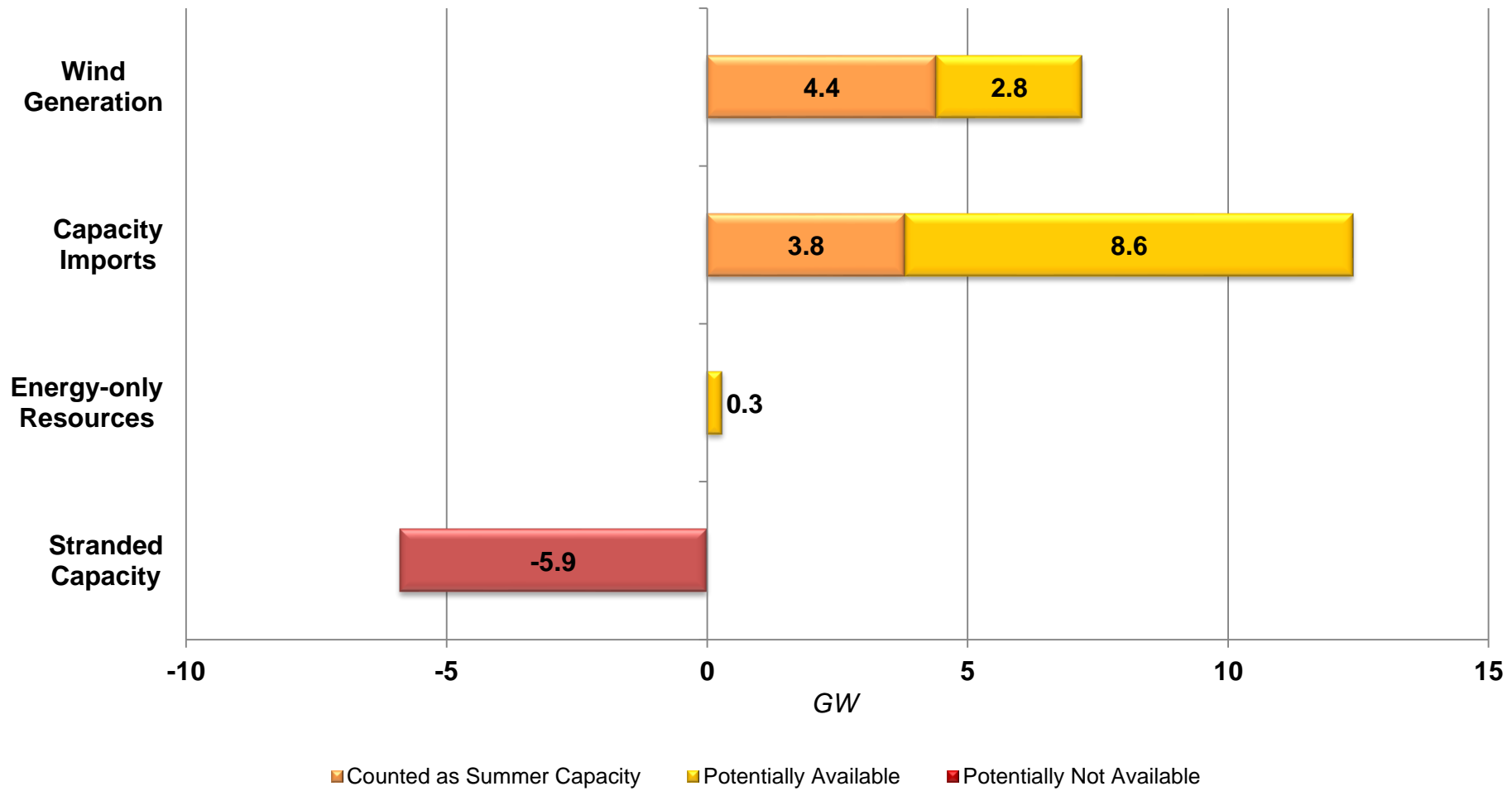
³ 90% of the actual load being lower and 10% chance of the actual load being higher

High load and outages may present challenges in reliably operating through the upcoming summer

Summer 2020 Resource Adequacy Projections



The need for emergency procedures will be impacted by the availability of resources



COVID-19 Impact: Operations Overview

Tag Short

Outage Coordination: Summary of COVID and Summer Readiness

- MISO is seeing minor impacts to outage schedules due to COVID to date, no reliability impacts foreseen as a result of changing outage schedules.
- MISO currently working with Transmission and Generation Owners to reschedule outages with considerations for Summer Peak.
- Utilize the **requestor notes** section of your CROW ticket to record reasons for schedule changes due to COVID.

Outage Coordination impacts from Covid-19

- As of May 18, 2020, MISO has seen 109, or roughly 16%, of its planned transmission outages move; the majority of those are COVID related
 - Outage activity in the footprint experienced a slowdown in April, however, outage activity gradually returned throughout the month of May.
 - 21GW of planned generation outage schedules (approximately 35 generator outages) across the MISO footprint have been impacted by COVID. Changes include ending outages early, delayed start dates, cancellations and rescheduling for fall 2020.



Questions?



Contact Info

Bob Kuzman

Bkuzman@misoenergy.org

Tag Short

Tshort@misoenergy.org